

Tennessee Education Standards
Correlation with the 2005 Arbor Day National Poster Contest for 5th Grade

SCIENCE EDUCATION STANDARDS

Life Science

Content Standard: **2.0 Interactions Between Living Things and Their Environment.**

Learning Expectations: **2.2 Recognize that organisms are able to change their environment.**

Students will apply scientific understanding of environmental issues. Planting trees for biomass energy can have positive environmental consequences. Planting trees in windbreaks can protect the soil and water...and conserve use of fossil fuels. Based on information learned, students will “*Design an Energy-Wise Community Using Trees*” in various landscaping applications and recognize how human activity of properly placing and planting trees can produce positive benefits for the environment.

Content Standard: **3.0 Food Production and Energy for Life**

Learning Expectations: **3.2 Recognize the function of specific structures in organisms that allow them to obtain and use energy.**

Activities included in “*Design an Energy Wise Community Using Trees*” inform students about the transfer of energy through food chains and food webs. They connect the process of photosynthesis to energy conversion and transfer. Activities and assessments also center on the role trees play in both production of biomass energy and conservation of energy resources through various planting applications. Students will draw an energy flow chain.

Earth and Space Science

Content Number: **10.0 Earth Resources**

Learning Expectations: **10.3 Realize the difference between renewable and non-renewable resources.**

Activity, “*Design an Energy Wise Community Using Trees*,” focuses on identifying renewable resources and non-renewable resources and the opportunity biomass presents as a renewable resource and use as an energy crop.

Content Standard: **12.0 Structure and Properties of Matter**

Learning Expectations: **12.2 Recognize conditions that are associated with different states of matter.**

In the “*Conduct temperature and transpiration experiments to show how trees shade and cool their surroundings*” activities students will conduct tests to determine the impact of tree populations on temperature and the surrounding environment.

Content Standard: **13.0 Interactions of Matter**

Learning Expectations: **13.1 Describe the types of changes that result from interactions of matter.**

In the classroom activity, “*Conduct temperature and transpiration experiments to show how trees shade and cool their surroundings*,” students will have an opportunity to look inside a leaf and observe the stoma and chloroplasts and relate those structures’ functions to the process of photosynthesis and transpiration.

Content Standard: **14.0 Energy**

Learning Expectations: **14.1 Know that energy exists in many forms.**

Activities included in “*Design an Energy Wise Community Using Trees*” inform students about the transfer of energy through food chains and food webs. They connect the process of photosynthesis to energy conversion and transfer. Activities and assessments also center on the role trees play in both production of biomass energy and conservation of energy resources through various planting applications. Students will draw an energy flow chain.